Volunteer Lake Assessment Program Individual Lake Reports

TOM POND, WARNER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	601	**Max. Depth (m):**	4.4	**Flushing Rate (yr^{1})**	3.5
Surface Area (Ac.):	32	**Mean Depth (m):**	2.5	**P Retention Coef:**	0.57
Shore Length (m):	1,600	**Volume (m^3):**	314,000	**Elevation (ft):**	383

TROPHIC CLASSIFICATION

Year	Trophic class
1998	MESOTROPHIC
2006	MESOTROPHIC

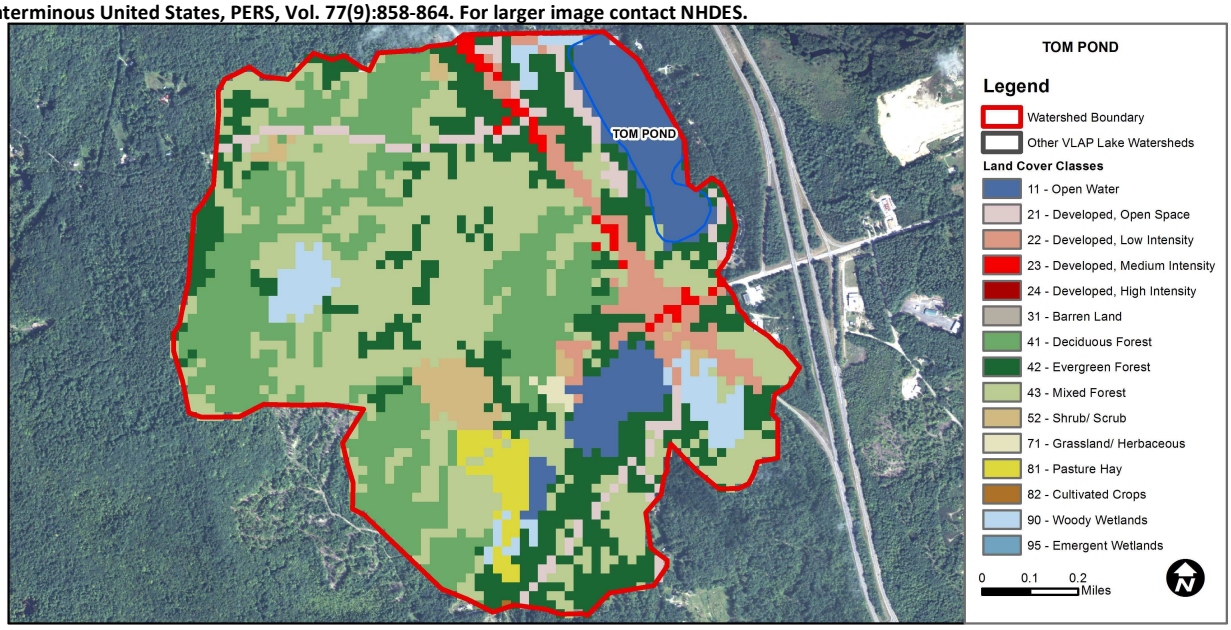
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

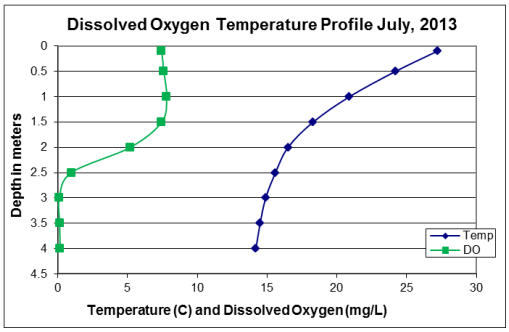


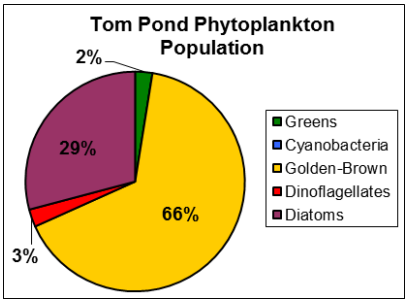
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.48	Barren Land	0	Grassland/Herbaceous	0.32
Developed-Open Space	3.66	Deciduous Forest	21.77	Pasture Hay	1.97
Developed-Low Intensity	4.56	Evergreen Forest	19.51	Cultivated Crops	0.03
Developed-Medium Intensity	1.2	Mixed Forest	32.06	Woody Wetlands	3.82
Developed-High Intensity	0	Shrub-Scrub	2.62	Emergent Wetlands	0

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
TOM POND, WARNER, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated in June and July and indicative of an algal bloom. Phytoplankton data indicate a dominance of Golden-Brown and Diatom algae. Chlorophyll levels decreased slightly in August. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were slightly elevated and greater than the state medians. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began. Road salting practices along I-89 are likely contributing to the elevated conductivity.
- **E. COLI:** Inlet E. coli levels were slightly elevated in July but not greater than the state standard for surface waters. Outlet E. coli levels were much less than the state standard for surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly elevated in June and July and increased from 2012. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Inlet phosphorus levels were slightly elevated in July and the turbidity was also slightly elevated. Outlet phosphorus levels were elevated in August potentially due to impacts from beaver dams. Stormwater runoff from the above average rainfall and high water levels from beaver dams slowing Outlet flow likely contributed to elevated phosphorus and algal blooms.
- **TRANSPARENCY:** Transparency remained within an average range and was slightly less than the state median. Historical trend analysis indicates stable transparency with low variability between years.
- **TURBIDITY:** Epilimnetic turbidity was slightly elevated in June potentially due to algal growth and/or high water levels. Inlet turbidity was slightly elevated in July and greatly elevated in August due to low flow conditions and sediment. Outlet turbidity was slightly elevated in June.
- **PH:** Deep spot and tributary pH levels were less than desirable range 6.5 – 8.0 units.
- **RECOMMENDED ACTIONS:** Beaver dams were impeding flow through the Outlet. This resulted in high water levels in June after significant early summer rainfall and a lack of flushing nutrients out of the pond which likely led to the algal bloom in June and July. The UNH Cooperative Extension document "Beavers and Their Control" offers suggestions on ways to manage beaver populations. Installation of one or several beaver pipes may provide some relief from high water levels. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff and reducing the nutrient load from lake and watershed properties, dirt/gravel roads and steep slopes. DES' "Homeowner's Guide to Stormwater Management" is a good resource for the homeowner.





NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2013 Average Water Quality Data for TOM POND

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	9.20	13.55	13	80.0		12	2.33	2.30	1.21	6.62
Hypolimnion				83.3		17			1.49	6.31
Inlet			30	117.5	65	19			6.06	6.45
Outlet				92.6	50	28			1.26	6.53

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Degrading	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Degrading	Data significantly increasing.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.